

We claim:

1. A reverse osmosis system comprising:

a) a reverse osmosis unit having a source water input, a permeate output and a concentrate output;

b) a storage tank for storing permeate discharged by said reverse osmosis unit, comprising:

i) a tank housing;

ii) an elastomeric bladder contained within said housing and;

10 iii) structure defining a pressurizing region between an outside of said bladder and an inside of said tank housing;

c) a control valve assembly, comprising:

i) a pilot valve responsive to the opening and closing of a permeate dispensing device through which permeate stored in said bladder is dispensed;

15 ii) said pilot valve including a flow control element movable between a first and second positions;

20 iii) said control element moving to said first position when permeate is not being dispensed by said dispensing device and moving to said second position when permeate is being dispensed by said dispensing device;

25 iv) a servo valve responsive to the positions of said pilot valve control element, such that when said pilot valve element is in its first position a flow control member within said servo valve moves to a first position at which said pressurizing region in said tank is communicated with a drain;

30 v) said servo valve flow control member moving to said second position in response to movement of said pilot valve element, wherein said pressurizing region of said tank is

communicated with a source pressure, whereby contracting forces are applied to said bladder in order to drive permeate from said bladder of said tank and to said dispensing device.

2. A storage device for storing treated water discharged by a water treatment unit, comprising:

a) a tank assembly including an outer tank housing enclosing within it, an expandable bladder;

5 b) a pressurizing region defined between an outside of said bladder and an inside of said outer tank housing;

10 c) a valve member for controlling the communication of source water under pressure with said pressurizing region and for controlling the communication of said pressurizing region with a drain;

15 d) a fluid pressure operated control device responsive to a dispensing device for said treated water, said control device operative to connect said source water to said pressurizing region when said dispensing device is dispensing treated water and operative to communicate said pressurizing region with said drain when said dispensing device is not dispensing water.

3. The apparatus of claim 2, wherein said control device includes a pilot valve responsive to a fluid pressure at said dispensing device and movable between at least two positions and a servo valve responsive to the position of said pilot valve.

4. The apparatus of claim 3, wherein said pilot valve includes a source water port, a common port, and a drain port.

5. The apparatus of claim 4, wherein said pilot valve further includes a piston operated land for controlling the communication between said common port

and said source port and between said common port and said drain port.

6. The apparatus of claim 5, further comprising a servo valve having a source water port, a common port and a drain port.

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7. The apparatus of claim 6, wherein said servo valve further includes a piston operated spool valve for controlling the communication of said common port with said source water port and said drain port, said common port and drain port being sized to permit relatively unrestricted flow of source water out of said pressurizing region of said tank assembly when said servo valve common port and servo valve drain port are cross communicated by said spool valve.

8. The apparatus of claim 7, wherein said water treatment unit comprises a reverse osmosis module having a permeate output, a source water input and a concentrate output.

9. The apparatus of claim 8, further including a post filter disposed between a supply conduit communicating with said tank assembly and said dispensing device whereby treated water dispensed from said tank assembly tank is conveyed through said post filter before being dispensed.

10. A storage system for a reverse osmosis system, comprising:

a) a storage tank having a tank housing enclosing an elastomeric, expandable bladder;

5 b) said tank housing and bladder defining therebetween a pressurizing region for receiving fluid under pressure for exerting contracting forces on said bladder to expel permeate contained in said bladder;

10 c) a pilot valve responsive to the state of a dispensing device such that said pilot valve moves to a first position when permeate is being dispensed by said dispensing device and moves to a second position when said dispensing device is not dispensing permeate; and,

15. d) a servo valve responsive to said pilot valve and operative to communicate source water under pressure to said pressurizing region of said storage tank when said pilot valve is in its first position and operative to communicate said pressurizing region with a drain when said pilot valve is in its second position.

11. The apparatus of claim 10, wherein said pilot valve is responsive to pressure in a permeate supply line feeding said dispensing device.

12. A storage assembly for storing treated water discharged by a water treatment unit, comprising:

a) a tank assembly including an outer tank housing and enclosing within it an expandable bladder;

c) a control valve mounted to said outer tank housing;

10 d) said control valve including a depending, threaded segment extending into an interior of said tank housing; and,

15 e) a threaded retaining element threadedly receivable by said control valve segment and operative to capture a neck portion of said bladder between itself and an engagement surface defined by said lower segment.

13. The apparatus of claim 12, further including a retainer bearing disposed between said retainer and said bladder neck which facilitates relative rotation between said bladder and said retainer.